

## Hudson Hill Hold\*

By T. H. STAMBAUGH, Director of National Service Operations  
Hudson Motor Car Company, Detroit, Mich.

Hydraulic Hill Hold is an item of equipment applicable to all 1940 Hudson models. A brief description of the unit as installed on Hudson cars, together with information concerning its major adjustments, follows:

The Hill Hold unit is interposed between the brake master cylinder and the wheel cylinder lines and utilizes the brakes of all four wheels to hold the car from backing when stopped on an upgrade. It does not affect the normal operation of the brakes in any way, nor are there separate buttons or levers to manipulate. Of perhaps greater importance, the driver is not required to change his driving habits in the operation of the brakes or car. As the car is brought to a stop on an upgrade and both clutch and brake pedals are depressed, Hill Hold automatically keeps the brakes applied while

the clutch pedal is depressed, even if the foot is removed from the brake pedal, leaving it free to operate the accelerator pedal when the car is again started.

On cars equipped with automatic clutch control in addition to Hill Hold, the clutch pedal must remain depressed while the car is standing.

### OPERATION

Figs. 1 and 2 show the various parts of the unit. A is the valve body having an inlet M which is connected direct to the master cylinder and an outlet N which is connected to the wheel cylinder lines.

The valve cage B contains a ball C which is free to slide in the valve body.

Fig. 1 shows the position of the various parts when the clutch pedal is not depressed. When the brake pedal is depressed, fluid is forced from the master cylinder into M through the valve seat P and out N to the wheel cylinders applying the brakes.

If the clutch pedal is depressed before the brakes are applied, the parts will be in

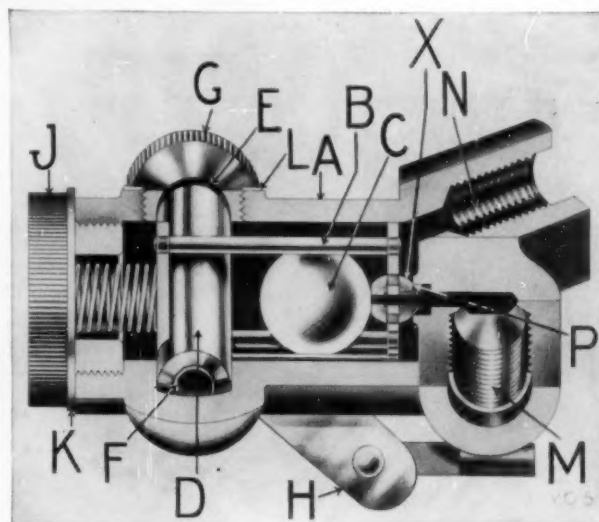


Fig. 2—Hill Hold With Clutch Pedal Depressed

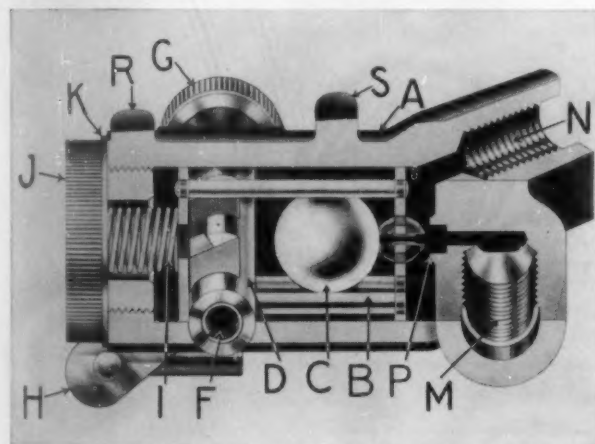


Fig. 1—Hill Hold With Clutch Pedal Not Depressed

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It should be noted that the ball C is free to roll in Cage B. When the car is headed upgrade, the ball will always roll back against the seat X and operation will be as previously described. If the car is headed downhill, the ball will roll to the front of the cage, so that the passage will always be open, and the brakes will not remain applied, so that the device does not function during the normal operation of the car except to prevent roll back when starting on an upgrade.

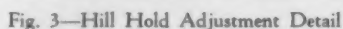
The car must be placed on a level floor. Loosen bolts C and D as shown in Fig. 3,

These adjustments are important to insure ball C being on its seat at back of cage B when car is headed upgrade, and off the seat when headed downgrade. The proper position will also insure the ball rolling forward when the brakes are applied as the car is moving forward.

The rod E (Fig. 3) connects to the camshaft in the unit. If the car rolls backward when attempting to start forward by en-

If brakes are delayed in disengaging as the clutch is engaged, lengthen rod E by turning sleeve B off rod E one or two turns as necessary. Tighten nut A after adjustment is completed. This is important to insure proper timing, permitting the application and release of the unit with engagement and disengagement of the clutch. When the unit is properly adjusted, the brakes will release as the clutch engages.

*Editor's Note:* This description of the operation of the Hill Hold (NoRoI) and instructions for making external adjustments on the unit as applied to Hudson cars will apply in general to other makes and models of cars using this equipment.



Willys factory sales to the end of April were 125% ahead of the same period last year.

Summer vacation travel is to increase 15% according to motor club and tourist bureau authorities. Major gains will be on account of the reopening of both the New

Pontiac deliveries for April showed an increase of 42% over the same period last year, and a gain of 1,040 units over the month of March this year.



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### Ventilating Systems

The first deviation from the original design of the "breather" pipe was to introduce steel wool as a cleaning agent to prevent intake of abrasives into the crankcase. Later it was found that if some means could be devised to remove condensation from the crankcase, dilution and sludge formation would be retarded.

The "pressure-suction" system of crankcase ventilation has been successfully used on Pontiac and other engines for many years. There have been minor changes in the ventilator inlet and outlet, but the principle remains the same—to introduce air into the crankcase by means of pressure from the fan blast and draw air and impurities from the crankcase by suction through the ventilator outlet pipe.

The function of ventilator outlets is to draw air moisture and gases from the crankcase at low velocities without drawing off oil vapors to the extent that serious oil losses are sustained. Therefore, air entering the crankcase should have uninterrupted flow through the ventilator outlet. No attempt should be made in service to block the air flow through the ventilator outlet. At high speeds a large volume of air enters the crankcase and if the ventilator outlet is blocked, oil may be forced out at the rear main bearing or other points. At low speeds stoppage of the outlet may be such that no air is drawn off through the outlet pipe, and the "breathing" of the engine is solely through the ventilator inlet.

The air outlet filtering element, if one is used, should be cleaned each time the carburetor air cleaner is serviced. In the case of a very slow or a very fast driver, it may be advisable to remove and discard the outlet filtering elements to avoid either of the above conditions that might exist unless the element is kept free and clean at all times.

The principles of crankcase ventilation are quite similar in the majority of present day automotive engines. On 1939 and pre-

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## Car Manufacturers' Latest Recommendations\*

**AMERICAN BANTAM (65)—1940**—When this model came out, the factory recommended the use of SAE 30 Motor Oil in the crankcase for temperatures over 90°. This recommendation has been changed to SAE 40.

**DE SOTO 6 (S7)—1940**—Detroit universal joints of the ball and trunnion type were used on some 1940 De Soto cars, although the greater part of production used Detroit cross type joints. The cross type joints are packed with lubricant at assembly and require repacking only when disassembled for some other purpose. Ball and trunnion type joints require disassembly and repacking with Universal Joint Grease every 15,000 miles. The universal joint spline on models with cross type joints requires lubrication with Chassis Lubricant every 2,000 miles.

**FORD (85)—1940**—Late Standard 85 models are not equipped with fittings for lubrication of the stabilizer swivel. The construction has been changed and the new design requires no lubrication.

**FORD and MERCURY—1940**—Ford no longer gives the option of Fluid Gear Lubricant or Mild Extreme Pressure Gear Lubricant for transmission lubrication. Fluid Gear Lubricant only is recommended, SAE 140 above  $\pm 32^\circ$  and SAE 80 below  $\pm 32^\circ$ . Mild Extreme Pressure Gear Lubricant is recommended for the differential, SAE 140EP above  $\pm 32^\circ$  and SAE 80EP below  $\pm 32^\circ$ .

**HUDSON—1940**—A new model, the De Luxe 8 (45), has been added to the line. Lubrication details are the same as for the other 8's.

**LINCOLN ZEPHYR—1940**—Fluid Gear Lubricant SAE 80 is now recommended for use in the transmission below  $\pm 32^\circ$ .

**STUDEBAKER, All 1935-40 Models**—The clutch shaft should be lubricated by applying Motor Oil to the shaft bearings at each side of the transmission housing, every 1,000 miles.

**STUDEBAKER Champion (2G) — 1940**—The universal joint spline on models with overdrive requires lubrication with Chassis Lubricant every 1,000 miles. On models with conventional transmission, the spline requires no lubrication.

**WILLYS 440—1940**—Both Monroe and Gabriel shock absorbers have been used in production.

### PONTIAC CLUTCH CONTROL COUNTER SHAFT LUBRICATION

The 1939 and 1940 Pontiac cars are

equipped with a clutch control counter shaft mounted between brackets that are fastened to the frame and to the engine. Lubrication is provided by heavy felt washers adjacent to the frame and the engine counter shaft brackets, and these felts should be kept moist with engine oil. If the felts are allowed to become dry, a squeak may develop when the engine rocks in its mountings, thereby causing movement of the clutch control counter shaft and brackets. These felts should be oiled with Motor Oil every 1,000 miles.

### 1940 OLDSMOBILE CLUTCH RELEASE BEARING NOW LUBRICATED

Starting approximately April 1, 1940, with Engine Number 190392 on Series 60 and 70 (6 cylinder models) and Engine Number 365742 on Series 90 (8 cylinder models), all 1940 Oldsmobiles have an additional point of lubrication at the clutch release bearing. The new assembly has a pressure gun fitting of the check valve type, pointing downward at a  $45^\circ$  angle, mounted on the left side of the bearing carrier. The fitting is easily reached by removing the lower clutch cover.

There is a groove cut into the bearing housing leading from the inner end of the ball end fitting, which terminates in a vent hole. The lubricant should be applied until it starts to escape at this vent hole, which can be easily seen as the bearing is being serviced.

Petrolatum or Vaseline is Oldsmobile's authorized recommended lubricant for this point. According to the factory, greases having a soap or other base have a tendency to clog the porous carbon bearing, whereas Petrolatum or Vaseline readily penetrates it.

On cars used in types of service where unusual frequency of de-clutching is necessary (such as in taxicabs or police scout car service), or on cars driven by a habitual "clutch rider," this point should be lubricated every 5,000 miles. Under normal clutch operations this point will probably not require lubrication at all, and should therefore be serviced only when and if the initial factory filling has become depleted.

Service station personnel can easily check to determine if this new fitting is installed on the car in question by checking with the engine numbers given above. All engines carrying numbers higher than these will be equipped with this new clutch release bearing fitting.

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### Car Manufacturers' Latest Recommendations

(Continued from Page 3)

vious Pontiac models, the oil filler pipe must be removed for cleaning the air inlet filter. On 1940 models the ventilator inlet is in the oil filler cap, which location is almost uniform on current car production.

WASHINGTON, July 12.—Secretary of Commerce Harry L. Hopkins announced Thursday that the Department of Commerce had prepared a businessman's guide book for use in co-operation with the national defense procurement program, detailing the locations of the War and Navy Departments' field procurement offices and a partial list of materials being purchased by these agencies.

## TRABON

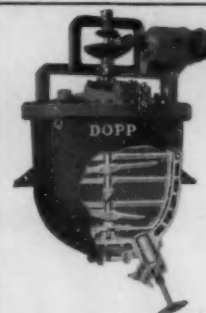
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